

Minnesota.—8th.
 Missouri.—18th, 27th.
 Nebraska.—7th, 10th, 12th, 21st, 22d, 26th, 28th.
 Nevada.—12th.
 New Jersey.—7th, 17th, 28th.
 New York.—1st, 6th, 7th, 9th, 11th, 18th, 30th,
 North Carolina.—3d, 10th, 12th, 15th, 17th.
 Ohio.—1st, 2d, 5th, 10th, 14th, 16th, 21st, 25th.
 Oregon.—23d, 24th, 25th, 27th.
 Pennsylvania.—2d, 17th, 18th, 21st, 26th, 28th, 30th.
 Rhode Island.—1st, 7th, 11th, 15th, 28th.
 South Carolina.—7th.
 Tennessee.—2d, 12th, 14th, 21st, 26th, 27th, 29th.
 Texas.—4th, 11th, 16th.
 Utah.—25th.
 Virginia.—5th, 9th, 14th, 17th, 22d, 24th, 26th, 30th.
 Washington Territory.—8th, 20th, 23d.
 Wisconsin.—4th, 27th.
 Wyoming.—3d, 12th, 13th, 15th, 16th, 18th, 19th, 25th.

LUNAR HALOS.

Lunar halos were observed in the various states and territories as follows:

Alabama.—27th.
 Arizona.—3d, 21st, 22d, 25th.
 Arkansas.—21st, 26th, 28th, 29th.
 California.—23d to 26th.
 Colorado.—26th.
 Connecticut.—25th.
 Dakota.—22d to 26th.
 Florida.—20th to 27th, 30th.
 Georgia.—24th, 26th, 27th, 29th.
 Illinois.—21st, 27th.
 Indiana.—20th, 21st, 23d, 24th, 27th, 29th.
 Iowa.—1st, 20th, 22d, 23d, 24th, 26th, 27th, 28th.
 Kansas.—4th, 20th, 24th, 26th, 27th, 28th.
 Kentucky.—20th, 23d, 27th.
 Louisiana.—19th, 24th.
 Maine.—20th, 23d, 27th.
 Maryland.—1st, 18th.
 Massachusetts.—7th, 25th.
 Michigan.—1st, 20th, 23d to 27th.
 Minnesota.—23d, 26th, 28th.
 Missouri.—1st, 24th, 26th, 28th.
 Montana.—Fort Shaw, 23d.
 Nebraska.—19th, 21st, 22d, 26th.
 Nevada.—24th, 25th.
 New Hampshire.—30th.
 New Jersey.—1st, 2d, 24th, 27th.
 New York.—1st, 25th, 27th, 30th.
 North Carolina.—1st, 20th, 21st, 23d, 26th to 29th.
 Oregon.—20th, 23d, 24th, 25th.
 Pennsylvania.—18th, 21st, 25th, 27th.
 Rhode Island.—25th.
 South Carolina.—22d, 28th.
 Tennessee.—1st, 2d, 20th, 21st, 23d, 25th, 26th, 27th, 29th, 30th.
 Texas.—1st, 23d, 24th, 25th, 27th, 28th, 30th.
 Virginia.—1st, 2d, 22d, 24th to 28th.
 Washington Territory.—21st, 24th, 25th.
 Wisconsin.—1st, 24th, 26th, 27th.
 Wyoming.—Fort Bridger, 23d.

The phases of the moon during April were: last quarter, 7th, 9.36 a. m.; new moon, 15th, 12.46 a. m.; first quarter, 21st, 6.14 p. m.; full moon, 29th, 1.08 a. m.; apogee, 6th, 11.30 a. m.; perigee, 18th, 9.48 a. m.

MIRAGE.

Milwaukee, Wisconsin: on the 26th, at 2 p. m., Racine Point, twenty-five miles south of Milwaukee, was plainly visible.

Duluth, Minnesota, 30th: three small islands on the south shore of Lake Superior, ordinarily not visible, were plainly seen on this date.

Mackinaw City, Michigan 4th.
 Saint Vincent, Minnesota, 2d, 4th.
 Fort Totten, Dakota, 12th.

Webster, Dakota, 1st, 2d, 4th, 5th, 8th, 9th, 11th, 12th, 14th, 15th, 17th, 18th, 23d, 24th, 26th, 28th, 29th, 30th.
 Sherlock, Kansas, 6th, 15th, 16th, 28th.

MISCELLANEOUS PHENOMENA.

SUNSETS.

The characteristics of the sky, as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal Service stations. Reports from one hundred and sixty-four stations show 4,897 observations to have been made, of which seven were reported doubtful; of the remainder, 4,890, there were 4,205, or 86.0 per cent., followed by the expected weather.

SUN SPOTS.

Professor David P. Todd, director of the Lawrence Observatory, Amherst, Massachusetts, furnishes the following record of sun spots for April, 1885:

Date— April, 1885.	No. of new		Disappeared by solar rotation.		Reappeared by solar rotation.		Total No. visible.		Remarks.
	Gr'ps	Spots	Gr'ps	Spots	Gr'ps	Spots	Gr'ps	Spots	
1, 10 a. m.	0	0	0	0	0	0	3	50†	
4, 4 p. m.	3	20†	0	0	1	8†	6	50†	
5, 1 p. m.	0	30†	0	15†	0	0	5	60†	
6, 5 p. m.	1	5†	0	10†	1	1	6	50†	
9, 12 m.	1	45†	0	0	0	0	4	90†	
11, 10 a. m.	1	30†	0	0	0	3	5	120†	
14, 6 p. m.	0	0	0	0	0	0	2	40†	
16, 5 p. m.	0	0	0	0	0	0	1	30†	
18, 6 p. m.	0	0	0	0	0	0	1	10	
20, 6 p. m.	2	5	0	0	1	3	3	15†	
22, 6 p. m.	0	5†	0	0	0	0	3	20†	
23, 10 a. m.	0	10†	0	0	0	0	3	30†	
25, 10 a. m.	0	0	0	0	0	0	6	25†	
27, 12 m.	3	10†	0	0	1	3	5	35†	
30, 12 m.	1	25†	0	0	1	5	7	50†	

Faculae were seen at the time of every observation. †Approximated.

Professor Carpenter, of Lansing, Michigan, reports sun spots during the month of April as follows:

1st, 2 groups, 20 spots; 4th, 3 p. m., 3 groups, 17 spots; 6th, 3 p. m., 5 groups, 40 spots; 18th, 1 p. m., 2 groups, 13 spots; 21st, 2.45 p. m., 4 groups, 30 spots; 25th, 5 groups, 16 spots; 29th, 3 p. m., 5 groups, 28 spots. On account of cloudy weather, which prevailed during the greater part of the month, the above were the only observations made.

EARTHQUAKES.

The following notes, referring to the earthquakes which have occurred in California during April, 1885, are taken from the reports of Signal Service and voluntary observers and from various newspapers published in California:

Salinas, Monterey county, 2d.: at about midnight an earthquake shock was felt, its probable oscillation was from north to south.

Fresno, Fresno county, 2d.: a sharp shock of earthquake was felt at this place this morning about 7.25 o'clock. The shock appeared to come from the east. (*San Francisco Evening Bulletin*, April 2d.)

Merced, Merced county, 2d.: a heavy shock of earthquake was felt here at 7.25 this morning. It was noticed by many persons in different parts of the town, but most sensibly in the third and fourth stories of El Capitan Hotel. (*San Francisco Evening Bulletin*, April 2.)

Sacramento, Sacramento county, 3d.: earthquake shocks were felt at 10.15 a. m., lasting a few seconds; two distinct shocks occurred with a motion from northeast to southwest.

San Buenaventura, Ventura county, 7th: two distinct shocks of earthquake were felt here this morning at 2 o'clock. The shocks were from northeast to southwest. (*Sacramento Daily Record Union*, April 8.)

Bakersfield, Kern county, 7th: a shock of earthquake occurred here at 2.30 a. m.; it lasted about two seconds, and the motion was from north to south. It was followed by a rumbling